

Thus, claims 12 to 14, 16 to 20, 22, and 24 to 27 are currently pending for the Examiner's consideration.

Rejections Under 35 U.S.C. § 112, First Paragraph

In the office Action, the Examiner rejected claims 17 to 18, 22, and 24 to 27 as containing subject matter which was not described in the specification. Regarding claims 22, and 24 to 27, the present amendment amends claim 22, and thereby amends claims 24 to 27, to more precisely recite the procedure set forth on page 13 of the present application. It is therefore clear that claims 22, and 24 to 27 are fully supported by the specification as filed.

The Examiner did not make any mention of the deficiencies regarding claims 17 to 18 in the Office Action. However, the teachings supporting these claims is found at page 13, line 20 to page 14, line 2. As the specification clearly supports the claims as amended, the rejections based on lack of supportive description in the specification should be withdrawn.

The Examiner also rejected claims 14, 20, 22, and 24 to 27 as not being described in the specification in such a way as to enable one skilled in the pertinent art to make and/or use the invention. These rejections are respectfully traversed. Clearly, a person of ordinary skill in the art would recognize that the addition of another aluminum compound to a composition where abrasive boehmite (AlOOH) particles are

being formed would affect the solubility of the boehmite. Further, the total abrasiveness of the aluminum-type particles formed in the solution could be affected by the presence of sodium aluminate. Further, it would clearly not constitute undue experimentation for a person of ordinary skill in the art to determine by trial what particular amount of sodium aluminate would be most effective to obtain desired characteristics such as total aluminum particle abrasiveness and solubility of the boehmite. Consequently, these enablement rejections should be withdrawn.

Rejections Under 35 U.S.C. § 112, Second Paragraph

The Examiner rejected claims 12 to 14, and 25 as being indefinite. More particularly, the phrase "basic atmosphere" in these claims is considered nonidiomatic by the Examiner. These rejections are respectfully traversed. However, the claims are amended to recite that the slurry itself is basic in order to render these rejections moot.

Rejections Under 35 U.S.C. §§ 102(a), (b), or (e)/103(a)

The Examiner rejected claims 12 to 14 as being unpatentable over Cote in view of Wang. Claim 12 is amended to recite that the chemical-mechanical polishing is performed using a basic slurry containing abrasive particles consisting of boehmite. Neither Cote nor Wang teaches or suggests this

limitation. Cote discloses an alumina slurry that can be alkaline, and fails to mention the use of boehmite in any manner. Wang discloses slurries that include submicron alpha-alumina particles as an essential component, in addition to substantially less abrasive particles, that may include aluminum oxide materials such as boehmite. Consequently, each and every limitation recited in claim 12 (and therefore 13 to 14) is neither taught nor suggested by the combination of Cote and Wang.

Claim 13 is further rejected as being unpatentable over Cote and Wang, further in view of a cited Alcoa Technical Paper (Wefers). Although Wefers allegedly teaches that boehmite can be formed by treating aluminum with hot water, the reference clearly fails to teach or suggest any type of chemical-mechanical polishing process. Consequently, Wefers fails to compensate for the deficiencies of Cote and Wang in a manner that would teach or suggest to a person of ordinary skill in the art that such a process would be performed using a slurry of abrasive particles consisting of boehmite. Therefore, the rejection of claim 13 should be withdrawn for this additional reason.

Claims 16 to 20 are rejected as being unpatentable over Wang in view of Krussel and Winebarger. These rejections are respectfully traversed. None of these references teaches or suggests a slurry of abrasive particles that consist

essentially of boehmite.

Krussel and Winebarger are provided solely for their teachings of spin cleaning and rinsing agents, respectively. Only Wang teaches the use of boehmite in any respect. Yet, while Wang does disclose slurries that contain boehmite particles, the Wang slurries do not contain abrasive particles that consist essentially of boehmite. Rather, Wang slurries include submicron alpha-alumina particles as an essential and inventive component, in addition to substantially less abrasive particles, that may include aluminum oxide materials such as boehmite. The Examiner asserts that there is nothing of record that would indicate that the inclusion of between 1% and 50% of alpha alumina in replacement of the presently claimed boehmite would materially affect any basis and novel characteristic of the presently claimed polishing process. However, such indication is clearly made in the Wang patent itself. Wang explicitly teaches that the alpha alumina particles are an essential characteristic of the Wang invention in order to provide substantially more abrasive particles to the slurry, and consequently a substantially more abrasive slurry. It is readily apparent that, in a chemical-mechanical polishing process of thin films, the addition of substantially more abrasive particles would materially affect the present invention, which is taught throughout the specification as a means for overcoming problems with too much

or too little abrasiveness in polishing compositions. Thus, there is a material affect of adding alpha-alumina particles to the slurry of the present invention. Accordingly, the "consisting essentially of" limitation of claims 16 to 20 is not taught or suggested by any of the prior art references of record, and the rejection of claims 16 to 20 under 35 U.S.C. § 103(a) should be withdrawn.

Claim 19 is rejected as being unpatentable over the combination of references applied against claims 16 to 20, above, and further in view of Wefers. The rejection is respectfully traversed in light of the above discussion of Wefers regarding claim 13. Wefers fails to compensate for the deficiencies of the references applied against claims 16 to 20 above.

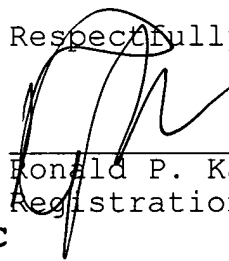
Claims 12 to 14 are rejected as being anticipated by, or unpatentable over Yamada. As established above, claim 12 is amended to recite that the chemical-mechanical polishing is performed using a basic slurry containing abrasive particles consisting of boehmite. In contrast, Yamada teaches a slurry that includes alpha alumina, and may have boehmite added as an additional component. Nowhere in Yamada is there any teaching or suggestion that the abrasive particles in the slurry consist of boehmite. Consequently, the rejections of claims 12 to 14 should be withdrawn.

Claim 13 is rejected as being unpatentable over Yamada in view of Wefers. The rejection is respectfully traversed in light of the above discussion of Wefers regarding claim 13. Wefers fails to compensate for the deficiencies of the references applied against claims 12 to 14 above.

The rejections of claim 21 are rendered moot as this claim has been canceled.

For the foregoing reasons, all the claims now pending in the present application are believed to be clearly patentable over the prior art of record. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

Respectfully submitted,



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Appendix
Amendments to the Claims

12. (amended) A chemical-mechanical polishing process for planarizing one or more thin films formed on a substrate, wherein the chemical-mechanical polishing is performed using a basic slurry containing abrasive particles [containing] consisting of boehmite [in a basic atmosphere].

22. (amended) A polishing process which comprises the steps of:

forming [a slurry containing] abrasive boehmite particles by dipping particles of aluminum in heated water with sodium aluminate added thereto;

creating a slurry containing said abrasive boehmite particles; and

planarizing at least one film formed on a substrate by employing a chemical-mechanical polishing process using said slurry[,

wherein said step of forming a slurry includes adding sodium aluminate to said heated water].

25. (amended) A polishing process according to claim 22, wherein said slurry used in said chemical-mechanical polishing process is [performed in] a basic [atmosphere] slurry.

26. (amended) A polishing process according to claim 25,

wherein said step of creating a slurry comprises suspending
said boehmite particles [are suspended] in a solution
containing KOH, water, and an alcohol.